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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,417	11/14/2003	Shivakumar Sitaraman	24-NS-120423-6	2288

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EXAMINER

PALABRICA, RICARDO J

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 03/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/714,417

Applicant(s)

SITARAMAN

Examiner

Rick Palabrica

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 2,8,9,11,16,17 and 20-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-7, 10, 12-15, 18, and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. Applicant's 2/3/06 Amendment, which directly amended claims 1 and 12, and traversed the rejection of claims in the 10/3/05 Office action, is acknowledged. Applicant's arguments have been fully considered but found not convincing.

2. The examiner has raised several issues regarding the sufficiency of applicant's disclosure, and has provided documentary evidence to support his reasoning. Applicant's main argument is that it would not require undue experimentation to arrive an operative embodiment of the applicant's invention. The examiner does not agree.

Note that the examiner's conclusions are based on all of the evidence of this case, including the specifications and the drawings, as well as case law and the MPEP.

Applicant's claims require estimating the helium content of a stainless steel core shroud in any boiling water reactor based on an equation derived from tests of unspecified number of samples taken from unspecified shroud locations of a boiling water reactor having unspecified power, core configuration, operating history and shroud material composition, which reactor has been operated ONLY for one fuel cycle (see paragraph 0027). In effect, applicant is essentially telling an artisan that, although the equation was derived from a specific set of test conditions and parameters, it can be used for generic application on any boiling water reactor and the results are expected to be accurate.

Applicant's refusal to provide information on the specifics of the test parameters and conditions, as well as the approximations, assumptions and estimates associated

with the equation, including its associated constants, require undue experimentation in order to use the claimed invention.

The cited prior art (e.g., Goel) and the applicant himself, indicate that helium formed by various nuclear processes in stainless steel has a pronounced effect on its mechanical and dimensional properties. Applicant himself further admits that knowledge of such helium production is important because of the need to perform welding on the shroud during maintenance and repair procedures (see paragraph 0006). Thus, a fairly accurate estimation of helium generation is necessary in order to perform proper work on the shroud because, according to the applicant, "as the helium content of a stainless steel component, for example, the shroud increases, the weldability of the stainless steel component decreases."

Applicant's claims require either the measurement of neutron fluxes or the calculation of neutron fluxes before the helium content of the shroud can be determined. The specification indicates that the neutron fluence at predetermined areas of the reactor be estimated from either measured or calculated neutron fluxes, before using the C_{He} equation (see paragraph 0007). Since applicant has refused to disclose both the locations where the test samples were taken and the specifics on the boiling water reactor from which the C_{He} equation was derived, an artisan must resort to a trial-and-error process to exercise the claimed invention. Flux measurements at many different sections of the shroud have to be taken. Alternatively, neutron fluxes have to be calculated, e.g., for different combinations of core configurations (i.e., specific fuel

management schemes) and their associated operating histories (e.g., for one fuel cycle, for two fuel cycles, etc.) and for different locations in the shroud.

It is the examiner's position that it would be undue experimentation for an artisan to utilize a trial-and-error process to make such measurements or calculations because of the size of the shroud, the inherent difficulties in performing such measurements under the cramped and high radiation levels in the reactor, as well as the large number of possible combinations of parameters for the required neutron flux calculations.

The examiner's conclusions are supported by MPEP 2164.06(a) and the case law cited therein. Applicant's illustration of his method through the block diagrams in Fig. 2, labeled, "Determine A Neutron Fluence For Predetermined Areas Of The Reactor", "Calculate Helium Content Of Components Using Equation: $C_{He} \dots$ ", etc., with no description of internals thereof, is similar to the situation in *In re Ghiron* 169 USPQ 723. Applicant's case is also considered analogous to *In re Scarbrough* 182 USPQ 298, wherein Scarbrough had a claim directed to a system of several component parts referred to by a generic name and overall ultimate function. The court concluded that there was no enabling disclosure because the specification did not describe how "complex elements known to perform broadly recited functions in different systems would be adaptable for use in Appellant's particular system with only reasonable amount of experimentation."

While the above, by itself, is considered evidence of undue experimentation, one is still not done!

An artisan has to verify the accuracy of the helium values calculated from the equation, in order to determine whether sufficient flux measurements at the various shroud locations have been made or whether sufficient scope of flux calculations has been done.

Again, applicant's failure to disclose the approximations, assumptions, and estimates utilized in arriving at the correlation, requires an artisan to validate the helium estimates from applicant's equation. This validation is especially needed because the equation and associated constants were derived from a reactor that has completed only ONE fuel cycle. Not all reactors are operated in such manner.

The only way to do this validation is by further analysis of specimens at the locations where the flux measurements and calculations were made, e.g., by experimental testing/analysis to determine the actual helium content of shroud samples. Such testing has to be performed for a statistically large number of specimens to obtain confidence in the results. If such testing reveals that the helium estimates from the equation are not sufficiently accurate, the entire process described above has to be repeated until satisfactory results are obtained. Clearly, this process, which may include repetitive implementation, presents undue experimentation.

In summary, the examiner has demonstrated above that applicant's disclosure is insufficient and non-enabling, and that undue experimentation would be required by an artisan to make and use an operative embodiment of applicant's claimed invention. The examiner's position is supported by the following sections of the MPEP and the case laws cited therein.

2164.06(a) Examples of Enablement Issues-Missing Information

"It is common that doubt arises about enablement because information is missing about one or more essential parts or relationships between parts which one skilled in the art could not develop without undue experimentation.

I. ELECTRICAL AND MECHANICAL DEVICES OR PROCESSES

For example, a disclosure of an electrical circuit apparatus, depicted in the drawings by block diagrams with functional labels, was held to be nonenabling in *In re Gunn*, 537 F.2d 1123, 1129, 190 USPQ 402, 406 (CCPA 1976). There was no indication in the specification as to whether the parts represented by boxes were "off the shelf" or must be specifically constructed or modified for applicant's system. Also there were no details in the specification of how the parts should be interconnected, timed and controlled so as to obtain the specific operations desired by the applicant.

In re Ghiron, 442 F.2d 985, 169 USPQ 723 (CCPA 1971), involved a method of facilitating transfers from one subset of program instructions to another which required modification of prior art "overlap mode" computers. The Board rejected the claims on the basis, *inter alia*, that the disclosure was insufficient to satisfy the requirements of 35 U.S.C. 112, first paragraph and was affirmed. The Board focused on the fact that the drawings were "block diagrams, i.e., a group of rectangles representing the elements of the system, functionally labeled and interconnected by lines." 442 F.2d at 991, 169 USPQ at 727. The specification did not particularly identify each of the elements represented by the blocks or the relationship therebetween, nor did it specify particular apparatus intended to carry out each function.

An adequate disclosure of a device may require details of how complex components are constructed and perform the desired function. The claim before the court in *In re Scarbrough*, 500 F.2d 560, 182 USPQ 298 (CCPA 1974) was directed to a system which comprised several component parts (e.g., computer, timing and control mechanism, A/D converter, etc.) only by generic name and overall ultimate function. The court concluded that there was not an enabling disclosure because the specification did not describe how "complex elements known to perform broadly recited functions in different systems would be adaptable for use in Appellant's particular system with only a reasonable amount of experimentation" and that "an unreasonable amount of work would be required to arrive at the detailed relationships appellant says that he has solved." 500F.2d at 566, 182 USPQ at 302.

2164.06 Quantity of Experimentation - 2100 Patentability**II. EXAMPLE OF UNREASONABLE EXPERIMENTATION**

In *In re Ghiron*, 442 F.2d 985, 991-92, 169 USPQ 723, 727-28 (CCPA 1971), functional "block diagrams" were insufficient to enable a person skilled in the art to practice the claimed invention with only a reasonable degree of experimentation because the claimed invention required a "modification to prior art overlap computers," and because "many of the components which appellants illustrate as rectangles in their drawing necessarily are themselves complex assemblages"

Art Unit: 3663

As to the other issues raised by the examiner in the 10/3/05 Office action, which applicant alleges would be known to one having ordinary skill in the art, applicant's arguments have no probative value because they are not supported by actual proof or evidence, i.e., they constitute no more than uncorroborative statements of the applicant (see MPEP 716.01(c)).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 3-7, 10, 12-15, 18 and 19 are rejected under 35 U.S.C. 112, first paragraph. The reasons are the same as those given in section 4 of the 10/3/05 Office action, as further clarified in section 2 above, which reasons are herein incorporated.
4. Claims 1, 3-7, 10, 12-15, 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, with the exception of the issues regarding the constant, b_j , and the fuel cycle. The reasons are the same as those given in section 5 of the 10/3/05 Office action, as further clarified in section 2 above, which reasons are herein incorporated.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:30-5:00, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJP
February 22, 2006

A handwritten signature in black ink, appearing to read "R. Palabica". The signature is fluid and cursive, with the first letter "R" being large and prominent. The name "Palabica" follows in a similar cursive style.